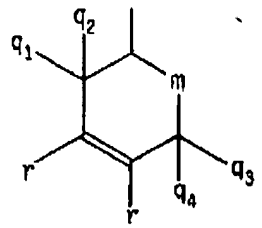

(I)

wherein q_1, q_2, q_3, q_4, and r are independently selected from hydrogen, methyl, or ethyl; m is $-(CH_2)_n-$, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q_1, q_2, q_3, and q_4 is also hydrogen in the packaging article.

REMARKS

1. Pending claims

After entry of the above amendment, claims 1-3, 6-7, 9-22, 25-26, 28-44, 46-50, 53-62, 64-72, and 74-78 are pending and under consideration. Claims 4, 8, 23, 27, 51, and 73 are withdrawn from consideration at this time.

2. Support for amendment

The above amendment is presented to render more clear throughout the claims that the term "oxygen scavenging polymer," as used in the claims, refers to a polymer comprising a cycloalkenyl group having structure (I) as described in the text of claim 1, among others. A marked-up copy of the amended claims, with insertions and deletions indicated by underlining and brackets, respectively, is attached hereto as an Appendix. No new matter has been added by this amendment.

3. Claim rejections under 35 U.S.C. §112

Claims 1-3, 6-7, 9-22, 25-26, 28-50, 52-62, 64-72, and 74-78 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner alleges the scope of the term "oxygen scavenger polymer" is not clear. As this rejection applies to claims 1-3, 6-7, 9-22, 25-26, 28-44, 46-50, 53-62, 64-72, and 74-78, as amended, Applicants respectfully traverse this rejection.

The Examiner alleged that the scope of "oxygen scavenger polymer" was not clear. However, in all claims where this term appears, the term is defined (or the claim depends on a claim wherein the term is defined) to refer to polymers comprising a cycloalkenyl group having structure (I), as defined in claim 1, among others. Therefore, the scope of the term is clear, and Applicants request this rejection be withdrawn.

4. Claim rejections under 35 U.S.C. §103

Claims 1-3, 6-7, 9-22, 25-26, 28-50, 52-62, 64-72, and 74-78 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bansleben et al., U.S. Pat. No. 6,255,248 (hereinafter "Bansleben") in view of Cahill et al., U.S. Pat. No. 6,083,585 (hereinafter "Cahill"). As it applies to claims 1-3, 6-7, 9-22, 25-26, 28-44, 46-50, 53-62, 64-72, and 74-78, as amended, Applicants respectfully traverse this rejection.

Bansleben is directed to compositions comprising (i) a copolymer of at least ethylene and a strained cyclic alkylene, (ii) a transition metal catalyst, and (iii) diluent polymers such as polyethylene terephthalate (PET) or polyvinylidene dichloride (PVDC), among others (col. 3, line 7-col. 4, line 19. The copolymer (i) may further comprise units having pendant cycloalkenyl moieties; an example of such a copolymer is ethylene/cyclopentene/4-vinylcyclohexene

(Examples 19-28, Table 2, cols. 13-14). Bansleben also reported a comparative example of ethylene/4-vinylcyclohexene copolymer (Comparative Example 29, col. 13, lines 40-44). Bansleben did not report examples of blends of a polymer comprising 4-vinylcyclohexene units with PET, PVDC, or other oxygen barrier polymers recited in the present claims (determined by search for the term "blend" in an electronic copy of Bansleben, http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=/netahtml/srchnum.htm&r=1&f=G&l=50&s1=6255248.WKU.&OS=PN/6255248&RS=PN/6255248, accessed September 30, 2002).

Cahill teaches an oxygen scavenging condensation copolymer comprising polyester segments and polyolefin oligomer segments, produced by condensation between the polyester segments and difunctionally derivatized polyolefin oligomer segments (e.g., diacid, diol, or diamine) (col. 12, lines 17-63). The polyolefin oligomer segments are considered to be oxygen scavenging (col. 10, lines 10-45). Cahill does not discuss cycloalkenyl moieties as oxygen scavengers (determined by search for the term "cycl" in an electronic copy of Cahill, http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PALL&p=1&u=/netahtml/srchnum.htm&r=1&f=G&l=50&s1=6083585.WKU.&OS=PN/6083585&RS=PN/6083585, accessed September 30, 2002.

Neither Bansleben, Cahill, nor their combination teach or suggest the claimed inventions as a whole, and therefore, they do not render any of the claims unpatentable.

Claims 1-3, 6-7, and 9-19 recite a composition comprising an oxygen barrier polymer, an oxygen scavenging polymer comprising a cycloalkenyl group having structure (I), and a transition metal catalyst. Bansleben, as stated above, does not teach blends of an oxygen scavenging polymer comprising a cycloalkenyl group with an oxygen barrier polymer. Cahill

does not teach oxygen scavenging polymers comprising a cycloalkenyl group, let alone such polymers in a blend with an oxygen barrier polymer. Therefore, the combination of the references does not teach the claimed blend.

Further, Bansleben and Cahill do not suggest the invention as a whole. The present invention recognizes that blends of an oxygen barrier polymer and an oxygen scavenging polymer comprising a cycloalkenyl group having structure (I) impart to a packaging article superior oxygen barrier properties relative to oxygen barrier polymers alone (p. 4, lines 25-28). Bansleben only refers to oxygen barrier layers separate from a layer comprising an oxygen scavenging polymer (col. 7, lines 23-60). Further, Bansleben recognizes no benefit to oxygen scavenging polymers comprising cycloalkenyl groups, *both* in focusing on polymers derived from vinylic polymerization of cyclopentene and thus scavenging oxygen via reactions with the strained ring of the cyclopentene unit and not through reactions at a carbon alpha to a double bond, *and* by referring to many non-cycloalkenyl non-conjugated diene mer units, such as octadiene, hexadiene, dicyclopentadiene, ethylidene norbornene, and vinyl norbornene, and providing no rationale for the use of vinyl cyclohexene in the comparative example (col. 2, lines 57-64). Further, one benefit generally recognized as of the present date concerning oxygen scavenging polymers comprising a cycloalkenyl group is superior organoleptic properties, but the qualitative odor descriptions of Bansleben's Table 6, cols. 15-16, provide no meaningful basis for Bansleben's allegation of superior qualities for ethylene/cyclopentene (ECP) and ethylene/4-vinylcyclohexene (EVCH) relative to styrene/butadiene/styrene (SBS) (col. 16, lines 43-45). Cahill also discusses packaging articles comprising, separately, an oxygen scavenging layer and an oxygen barrier layer (claim 1), and as discussed above, is silent regarding oxygen scavenging polymers comprising a cycloalkenyl group. Therefore, the references, alone or in

combination, do not suggest the invention of claims 1-19. Further, the references make no mention of the compatibilizers recited in claims 7-10 or the benzophenone-derivative photoinitiators containing at least two benzophenone moieties recited in claims 16-17, which indicates a further basis for the patentability of claims 7-10 and 16-17 over Bansleben and Cahill.

Claims 20-22, 25-26, 28-44, and 46-48 are directed to packaging articles comprising an oxygen barrier layer comprising a blend of an oxygen barrier polymer and an oxygen scavenging polymer comprising a cycloalkenyl group. As stated above, neither Bansleben nor Cahill refer to the recited blends of an oxygen barrier polymer and an oxygen scavenging polymer comprising a cycloalkenyl group, and instead refer only to packaging articles comprising separate oxygen barrier layers and oxygen scavenging layers. Therefore, these claims are patentable over these references. This is especially true for claims reciting compatibilizers or photoinitiators containing at least two benzophenone moieties, which are neither taught nor suggested by Bansleben, Cahill, or their combination, as discussed above.

Claims 49-50 and 53-59 are directed to methods of making oxygen barrier compositions comprising an oxygen barrier polymer and an oxygen scavenging polymer comprising a cycloalkenyl group. Because these compositions are patentable over Bansleben and Cahill, for the reasons discussed above, the method of making such compositions must also be patentable.

Claims 60-62, 64-72, and 74-78 are directed to methods of making packaging articles comprising an oxygen barrier layer comprising an oxygen barrier polymer and an oxygen scavenging polymer comprising a cycloalkenyl group. Because the layer is patentable over Bansleben and Cahill, for the reasons discussed above, the method of making a packaging article comprising the layer much also be patentable.

Therefore, Applicants request this rejection of claims 1-3, 6-7, 9-22, 25-26, 28-44, 46-50, 53-62, 64-72, and 74-78, as amended, be withdrawn.

5. Provisional double patenting rejection

Claims 1-3, 6-7, 9-22, 25-26, 28-50, 52-62, 64-72, and 74-78 are provisionally rejected under the judicially-created doctrine of obviousness-type double patenting over claims 4-11, 15, 17-27, 30, 37, 41, 43-66, 70, 71, 74, 76-80, 84, 86-88, 90-98, 102-113, and 115 of copending application Ser. No. 09/666,642. Applicants intend to file a terminal disclaimer in either the present application or Ser. No. 09/666,642, as appropriate, as such time as one or the other application is in condition for allowance, and request deferring resolution of this point until such time.

6. Final comments

In conclusion, Applicants hold claims 1-3, 6-7, 9-22, 25-26, 28-44, 46-50, 53-62, 64-72, and 74-78, as amended, are in condition for allowance. The Examiner is invited to contact the undersigned patent agent at (713) 934-4065 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

November 27, 2002

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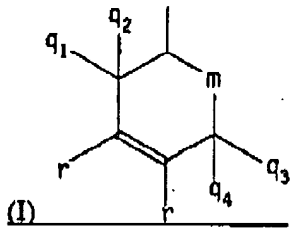
APPENDIX

Amended Claims:

40. (Amended) The packaging article of claim 20, further comprising an oxygen barrier layer, wherein the oxygen barrier layer does not comprise [an oxygen scavenging] a polymer comprising a cycloalkenyl group having structure (I).

41. (Amended) The packaging article of claim 40, wherein the oxygen barrier layer not comprising [an oxygen scavenging] a polymer comprising a cycloalkenyl group having structure (I) comprises poly(ethylene vinyl alcohol) (EVOH), polyacrylonitrile (PAN), a copolymer comprising acrylonitrile, poly(vinylidene dichloride) (PVDC), polyethylene terephthalate (PET), polyethylene napthalate (PEN), or polyamide other than MXD6.

44. (Amended) The packaging article of claim 20, further comprising an oxygen scavenging layer, wherein the oxygen scavenging layer comprises an oxygen scavenging polymer comprising an ethylenic backbone and a cycloalkenyl group with structure I:



(I)

wherein q_1, q_2, q_3, q_4, and r are independently selected from hydrogen, methyl, or ethyl; m is $-(CH_2)_n-$, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q_1, q_2, q_3, and q_4 is also hydrogen.

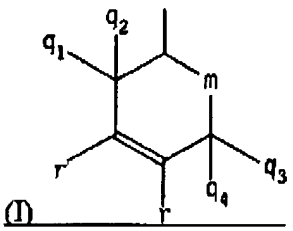
46. (Amended) The packaging article of claim [45] 44, wherein the oxygen scavenging polymer in the oxygen scavenging layer is selected from ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM), ethylene/vinyl cyclohexene copolymer (EVCH), ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

47. (Amended) The packaging article of claim [45] 44, wherein the oxygen scavenging layer is a liner, coating, sealant, gasket, adhesive, non-adhesive insert, or fibrous mat insert in the packaging article.

49. (Amended) A method of making an oxygen barrier composition comprising an oxygen barrier polymer and an oxygen scavenging polymer, comprising:

providing the oxygen barrier polymer and the oxygen scavenging polymer; and

blending the oxygen barrier polymer and the oxygen scavenging polymer to form the oxygen barrier composition, wherein the oxygen scavenging polymer comprises an ethylenic backbone and a cycloalkenyl group having the structure I:

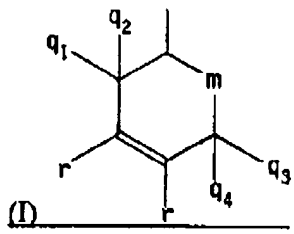


(I)

wherein q_1, q_2, q_3, q_4, and r are independently selected from hydrogen, methyl, or ethyl; m is $-(CH_2)_n-$, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q_1, q_2, q_3, and q_4 is also hydrogen.

53. (Amended) The method of claim [52] 49, wherein the oxygen scavenging polymer is selected from ethylene/methyl acrylate/cyclohexenylmethyl acrylate terpolymer (EMCM), ethylene/vinyl cyclohexene copolymer (EVCH), ethylene/cyclohexenylmethyl acrylate copolymer (ECHA), or cyclohexenylmethyl acrylate homopolymer (CHAA).

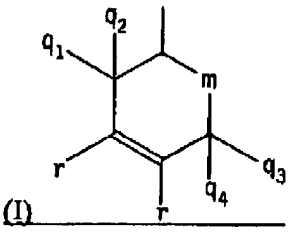
68. (Amended) The method of claim 60, wherein the forming step further comprises forming an oxygen barrier layer in the packaging article, wherein the oxygen barrier layer does not comprise [an oxygen scavenging] a polymer comprising a cycloalkenyl group having the structure I:



(I)

wherein q_1, q_2, q_3, q_4, and r are independently selected from hydrogen, methyl, or ethyl; m is $-(CH_2)_n-$, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q_1, q_2, q_3, and q_4 is also hydrogen.

70. (Amended) The method of claim 60, wherein the forming step further comprises forming an oxygen scavenging layer comprising a polymer comprising a cycloalkenyl group having the structure I:



(I)

wherein q_1, q_2, q_3, q_4, and r are independently selected from hydrogen, methyl, or ethyl; m is $-(CH_2)_n-$, wherein n is an integer from 0 to 4, inclusive; and, when r is hydrogen, at least one of q_1, q_2, q_3, and q_4 is also hydrogen in the packaging article.